Exploring Motion

1-5 The student will demonstrate an understanding of the positions and motions of objects. (Physical Science)

1.5.1 Identify the location of an object relative to another object.
Taxonomy level: 1.1-A Remember Factual Knowledge

Previous/Future knowledge: This is a foundational concept that students will develop further in future grades. In 3rd grade (3-5.1), students will identify the position of objects using positional terms (such as "above," "below," "inside of," "underneath," or "on top of") and a distance scale or measurement.

It is essential for students to identify the location of an object relative to another object using appropriate terms. Examples of descriptive words include:

- In front of
- Behind
- Between
- On top of
- Under
- Above
- Below
- Beside

It is not essential for students to go beyond identifying these terms.

Assessment Guidelines:
The objective of this indicator is to *identify* the location of an object relative to another object; therefore, the primary focus of assessment should be to locate knowledge about an object's position. However, appropriate assessments should also require students to *identify* the location of an object through descriptive words.

Exploring Motion

1-5 The student will demonstrate an understanding of the positions and motions of objects. (Physical Science)

1-5.2 Explain the importance of pushing and pulling to the motion of an object.
Taxonomy level: 2.7-B Understand Conceptual Knowledge

Previous/Future knowledge: This is a foundational concept that students will develop further in future grades. In 3rd grade (3-5.3), students will explain how the motion of an object is affected by the strength of a push or a pull and will begin to investigate the effect of gravity on the motion of an object.

It is essential for a student to know an object that is not moving will only move if it is pushed or pulled.

A push or a pull can affect the motion of an object in three ways: −
- It can make it go faster.
- It can make it slow down.
- It can change the direction of the motion.

It is not essential for students to determine how fast an object is traveling.

Assessment Guidelines:
The objective of this indicator is to *explain* the importance of pushing and pulling on an object's motion; therefore; the primary focus of assessment should be to construct a cause-and-effect model of the various ways that an object's motion is affected by pushing and pulling. However, appropriate assessments should also require students to *recall* that the motion of an object is changed if it is pushed or pulled; or *infer* what would happen if a certain object was pushed or pulled.

Exploring Motion

1-5 The student will demonstrate an understanding of the positions and motions of objects. (Physical Science)

1.5.3 Illustrate the fact that sound is produced by vibrating objects.
Taxonomy level: 2.2-B Understand Conceptual Knowledge

Previous/Future knowledge: This is a foundational concept that students will develop further in future grades. This is the first time that students have been introduced to the concept of how sound is produced. In 3rd grade, students will recall that vibrations produce sound (3-5.5) and will compare features of sound including pitch and volume (3-5.6), ways to change volume (3-5.7), and how vibrations affect pitch (3-5.8).

It is essential for students to know that sound is made when an object vibrates. *Vibrate* means that an object moves back and forth.

Examples of some ways that sound vibration can be illustrated are:
- Putting your hands on your throat and speaking
- Plucking a rubber band
- Strumming a guitar string
- Hitting a ruler on a desk

It is not essential for students to know pitch or volume at this grade level.

Assessment Guidelines:
The objective of this indicator is to *illustrate* how sound is produced; therefore; the primary focus of assessment should be to give a specific examples of ways that sound can be produced. However, appropriate assessments should also require students to *exemplify* objects that will vibrate; or *recognize* from pictures or diagrams when an object is vibrating.

Exploring Motion

1-5 The student will demonstrate an understanding of the positions and motions of objects. (Physical Science)

1-5.4 Illustrate ways in which objects can move in terms of direction and speed (including straight forward, back and forth, fast or slow, zigzag, and circular).
Taxonomy level: 2.2-B Understand Conceptual Knowledge

Previous/Future knowledge: This is a foundational concept that students will develop further in future grades. In 3rd grade (3-5.3), students will explain how the motion of an object is affected by the strength of a push or a pull and will begin to investigate the effect of gravity on the motion of an object (3-5.4).

It is essential for students to know how objects can move. The movement can be illustrated in terms of:

Direction
- The way or path that an object takes as it moves, such as straight forward, back and forth, zigzag, and circular.

Speed
- The pace or rate in which an object moves, such as fast or slow.

These movements are compared to the starting position before the object is moved.

It is not essential for students to explain how a change in the strength of the push or pull will affect the object.

Assessment Guidelines:
The objective of this indicator is to *illustrate* ways in which objects can move in terms of direction and speed; therefore, the primary focus of assessment should be to give specific examples through the use of pictures or words. However, appropriate assessment should also require students to *recall* how objects can move; or *compare* the movement of one object with another object.